



Fig. 1.

Fig. 2.

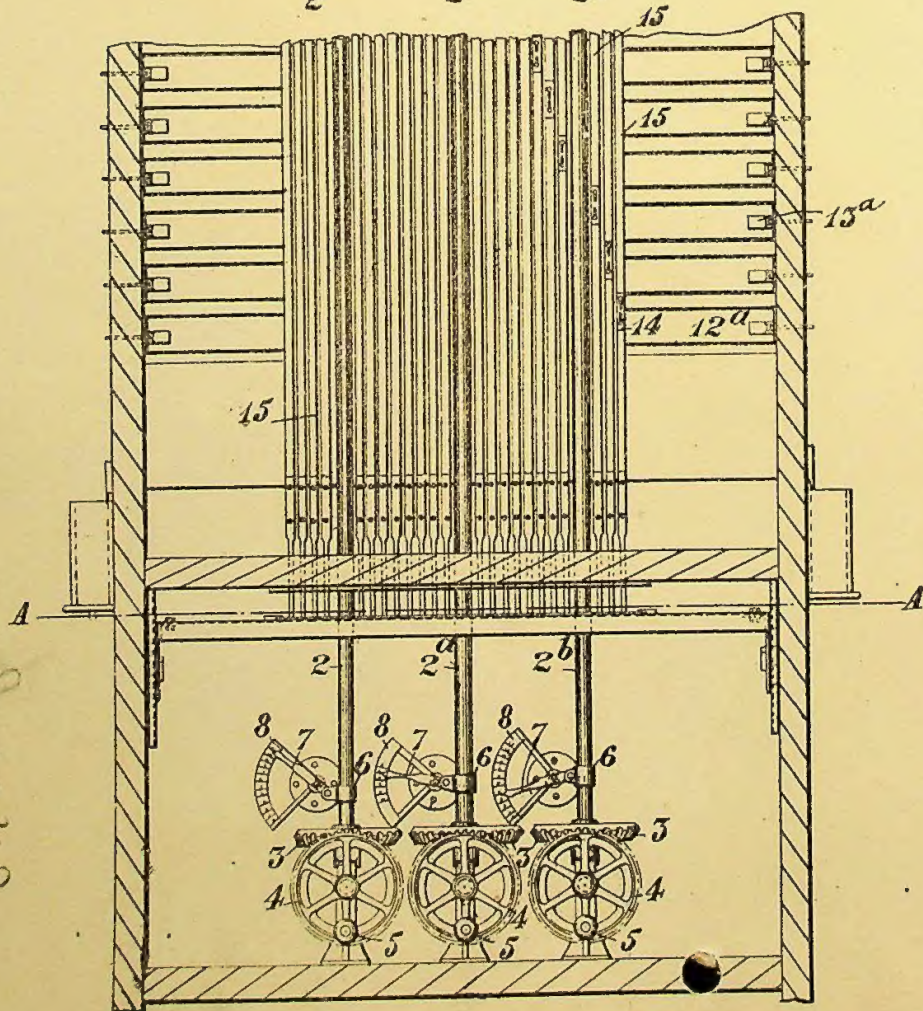
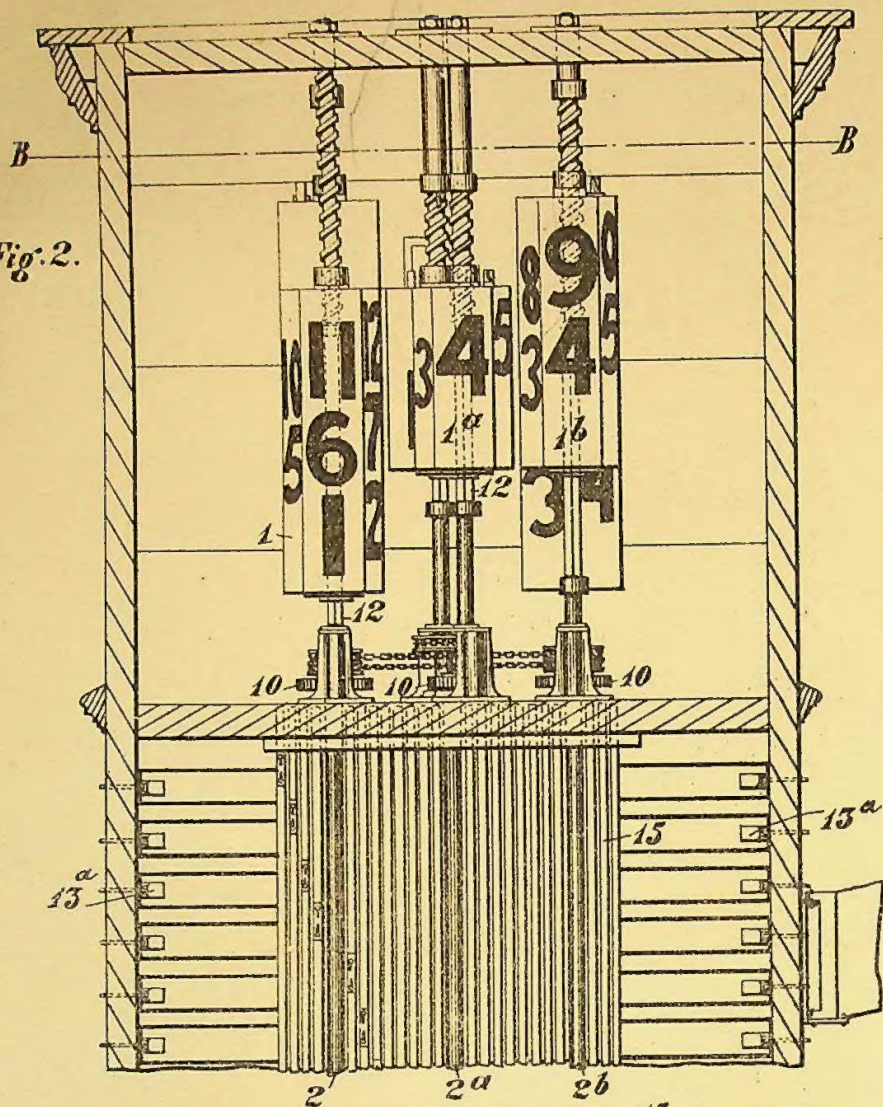
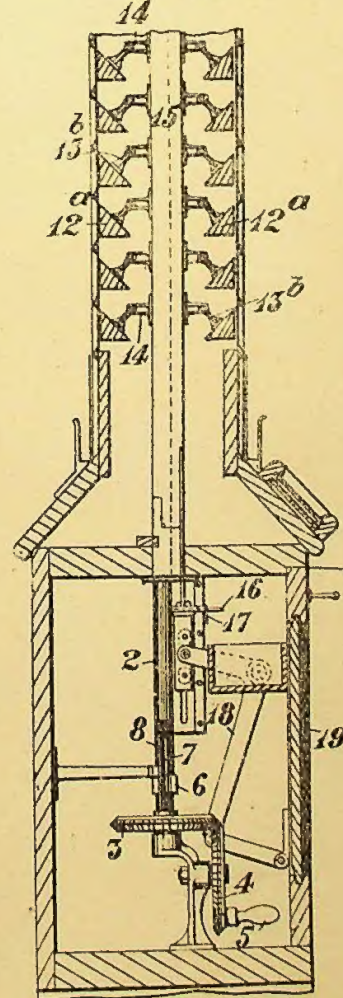
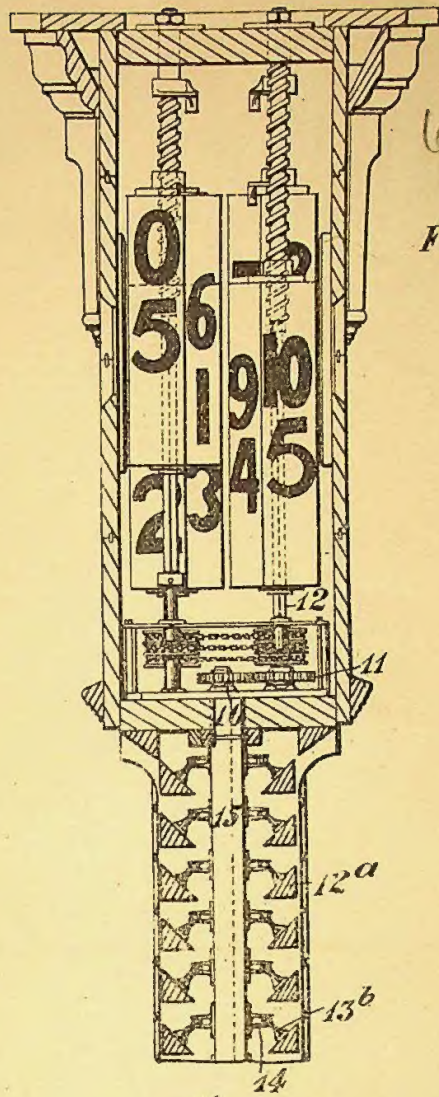


Fig. 3.



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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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Fig. 6.

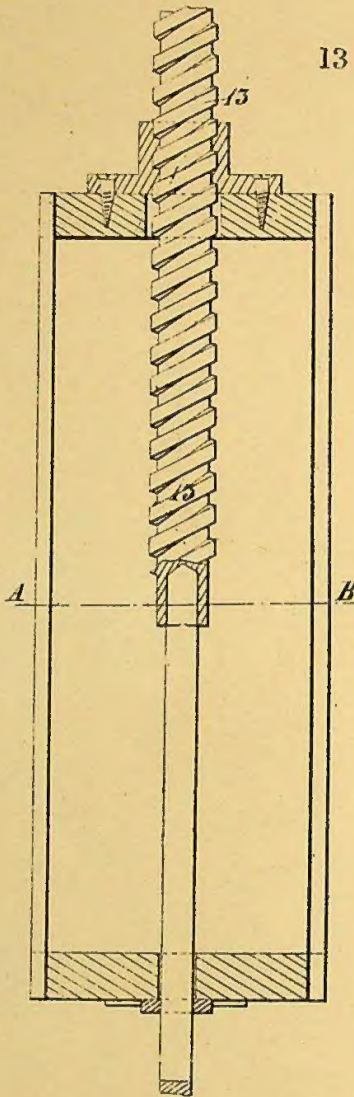
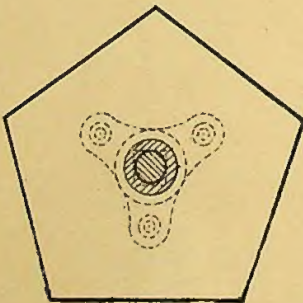


Fig. 7.



[This Drawing is a reproduction of the Original on a reduced scale.]

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Gosley 32
AA
A.D. 1890

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Complete Specification Left, 1st Nov., 1890—Accepted, 7th Feb., 1891

PROVISIONAL SPECIFICATION.

An Improved Apparatus for Indicating the Time of Departure of Railway Trains, Steamboats, Trams, and for other similar purposes.

JAMES HOWARTH Somerset House Newton Heath Engineer WILLIAM WHITE Foreman 23 Culcheth Lane Newton Heath County of Lancashire do hereby declare the nature of this invention to be as follows :—

- This invention relates to indicators, and has for its object, the facility of exhibiting to the public view, from either side, the time of departure of trains &c. and can be applied to work in combination with indicators, which give the names of stations at which the train will stop. In carrying out our invention, we employ three vertical columns on each side of the indicator, the said columns being either round, square or a five or more sided figure in shape.
- All six columns are geared together in pairs, & at opposite angles so as to revolve simultaneously. The columns are numbered from one to twelve, as required, in a helical line, and each mounted on a quick pitch vertical screw, so that as the columns revolve, they also at the same time raise or lower as required, and thus exhibit through a separate aperture the figures desired. The revolving of the columns is actuated by means of three vertical rods, the same being indexed similar to the numbers on the columns, to enable the operator to exhibit to public view the necessary figures on the columns, thus indicating the hour and minutes of departure, on both sides simultaneously.

Dated this 12th day of March 1890.

J. HOWARTH.
WILLIAM WHITE.

COMPLETE SPECIFICATION.

An Improved Apparatus for Indicating the Time of Departure of Railway Trains, Steamboats, Trams, and for other similar purposes.

- We, JAMES HOWARTH, of Somerset House, Newton Heath, Engineer, and WILLIAM WHITE, of 23, Culcheth Lane, Newton Heath, in the County of Lancashire, Foreman, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement :—

- This invention relates to an improved apparatus for indicating the time of departure of railway trains, steamboats, trams, and for other like purposes, the construction being such that it will exhibit to the public view, at two opposite sides, the time of departure of a train or other conveyance and can be applied to work in combination with indicators adapted to give the names of stations or places at which the train or other conveyance will stop. In carrying out our invention, we employ three vertical revoluble columns at each indicating side of the apparatus, the said columns being either round, square or polygonal. They may conveniently be pentagonal, as hereinafter described. The six columns are geared in pairs at opposite angles, so that those of a pair revolve simultaneously. The columns are marked with the numbers one to twelve as required, in a helical line, and each is mounted on a quick pitch vertical screw so that as the columns are rotated they are at the same time caused also to rise or descend as required and thus to exhibit through an aperture the figure desired.
- The rotation of the columns is effected by means of three vertical rods that

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actuate fingers which work over indexes marked with the same numbers as the columns to guide the operator in adjusting the columns so as to exhibit to public view at both sides of the apparatus simultaneously, figures representing the times of departure.

In the accompanying drawings we illustrate an apparatus according to this invention comprising our improved time indicator combined with an arrangement for shewing the names of stations at which a train or other vehicle will stop :—

Fig. 1 being an elevation of one side or front of the apparatus.

Fig. 2 a vertical section in a plane parallel to Fig. 1.

Fig. 3 a vertical section in a plane at right angles to Figs. 1 and 2. 10

Fig. 4 a sectional plan on line A A of Fig. 2.

Fig. 5 a sectional plan on line B B of Fig. 2.

Fig. 6 a detail shewing the arrangement of a column on its screw.

Fig. 7 a section on line A B of Fig. 6.

Fig. 8 is a view of the card such as is used to determine the names of stations to be exhibited. 15

The vertical columns 1, 1^a, 1^b, are ranged three on each of two opposite sides of the apparatus as represented in plan in Fig. 5. The columns 1 are marked with numbers from blank to 12, the columns 1^a from blank to 5, and the columns 1^b from blank to 9 and 0, the numbers on each column being arranged consecutively in a helical direction. 2, 2^a, 2^b, are three vertical rods each provided at the lower end with a bevel wheel 3 in gear with similar wheel 4 provided with a handle 5 by which the rod can be rotated. Each rod is formed with a screw thread on which is a nut 6 that works a finger or pointer 7 over a sector index 8 bearing the same numbers as the columns, so that each finger indicates the number for the time being exposed to view through apertures 9 in the upper part of the apparatus by the corresponding pair of columns. 25

The three rods before mentioned are provided at their upper ends with spur pinions 10, each in gear with the spur wheel 11 on the lower end of a square rod 12 that fits a corresponding hole in one of the columns. The square rods 12 are provided with chain wheels whereby they and consequently also the columns are geared in pairs. 30

The mode in which the six columns are thus geared is shewn clearly in the sectional plan Fig. 5 from which it will be seen that those constituting a pair will revolve simultaneously one at each of the two opposite sides or fronts of the apparatus. Each column is mounted on a quick pitch vertical screw 13 (Fig. 6) this screw is stationary and as the column is provided with a bush having a corresponding internal thread, the column on being revolved will be caused to rise or fall as required, and thus to exhibit through its aperture 9 (Fig. 1) the desired figure or figures, the like figure or figures being exhibited simultaneously at each of the two opposite sides of the indicator as already stated. 40

The various parts above enumerated are contained in a suitable frame or case as shewn in the drawings.

It is evident that time indicators on this principle may be used with various descriptions of apparatus for shewing the names of stations. In the example shewn in the drawings the names of stations are exhibited on horizontal boards or parts 12^a of triangular section arranged one above another and pivoted at 13^a. 45

The name of a station is painted on one side of each board, the other sides are plain and one side of each board has attached to it a bracket 13^b (Fig. 3) the end of which works in a slotted bracket 14 attached to a vertical rod 15 on which there is one for every station. There are two sets of the above described three-sided boards, that is, one set at each side of the indicator, each of the vertical rods 15 is therefore provided with two slotted brackets at opposite sides and each of these brackets engages with a bracket on an adjacent three-sided board in such a manner that when the rod is raised, the name of a station will be exhibited at both sides of the indicator, but when it is lowered the plain sides of the two boards controlled by the rod will be exhibited. 50 55

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There is therefore a vertical rod to each pair of three-sided name boards and these rods are raised by the aid of a Jacquard card.

The rods are arranged side by side in a row, in such manner that a card as long as the row of rods can be placed beneath their lower ends upon a suitable card plate. The card plate 16 and card 17 (Fig. 3) are raised by two bell cranks 18 on the closing of the door 19 of the box containing the card plate and other mechanism for working the indicator; the bell cranks being acted upon by the door in such manner that the card is raised in the act of closing the door, and lowered as the door is opened. In order that the card may on being raised lift only the vertical rods necessary to exhibit the names of those stations at which a train or conveyance is to stop each card has the names of all the stations on the indicator printed on it in such positions that when the card is in place on the card plate each name comes opposite the vertical rod connected with the corresponding name board of the indicator and before placing the card in position circular holes are punched in the card opposite to the names of the stations (as printed on the card) at which the train or conveyance is not to stop, hence when the card is in place and is raised by the card plate, the rods attached to the name boards of stations at which the train or conveyance will not stop, will not be raised but will pass through the holes in the card. In the card shewn in Fig. 8 the circles opposite the names indicate the places for punching the card as required. A separate card is to be used for each combination of stations.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed we declare that we do not claim broadly the use of a time indicator in conjunction with a station indicator or the use of a perforated card and means for raising it to cause the names of stations or places to be exhibited but what we claim is :—

1. The revoluble columns geared together in pairs and adapted to indicate times of departure simultaneously at two sides of the apparatus, as described.
2. The columns marked with figures in combination with means for imparting to them simultaneously an endwise movement and a rotary movement as described for the purpose specified.
3. The combination and arrangement of parts constituting the improved time indicator shewn in and described with reference to the drawings annexed.
4. The hereinbefore described compound apparatus comprising the means described for indicating the time of departure of railway trains or other conveyances in conjunction with the indicator for exhibiting at two sides of the apparatus the names of stations at which such trains or conveyances are to stop as set forth.

Dated this 31st of October 1890.

W. LLOYD WISE,

Per F. J. Brougham,

46, Lincoln's Inn Fields, London, W.C., Agent for the Applicants.